

NASA SBIR/STTR Technologies

High Temperature Polyimides for Resin Transfer Molding Process

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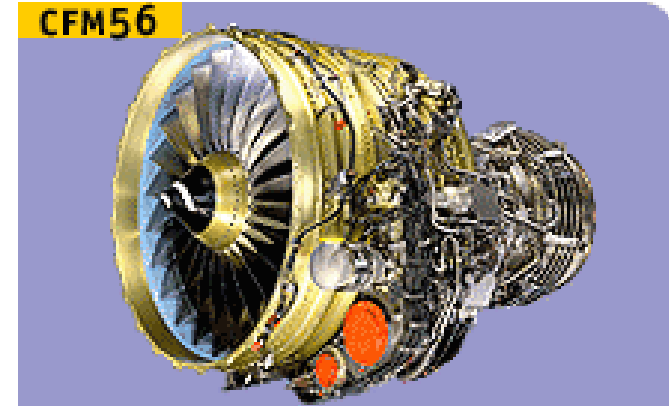
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Identification & Significance of Innovation

Develop a novel high temperature PMR-RTM/VARTM polyimide resin with viscosity of <5 Poise at 288 °C and will have a high Tg of 320-345 °C, with excellent long-term thermo-oxidative stability (<5% weight loss, 1000h at 288 °C), mechanical properties comparable to PMR-15, and will be non-MDA (methylene dianiline) based.

General Electric Aircraft Jet Engine



Technical Objectives

The overall objective of this Phase I program is to develop a high temperature RTM/VARTM processable polyimide with combination of properties and stability that are comparable to or exceed that of PMR-15.

Work Plan

Procure and synthesize monomers.

Synthesis of polyimide resins and hyperbranched oligomers.

Evaluation of properties of resins.

NASA Applications

Development of new RTM/VARTM, environmentally friendly high temperature polyimide resins would allow “out-of-autoclave” manufacturing of large structures such as large composite tanks for the next generation RLVs

Non-NASA Applications

The potential commercial applications are aircraft jet engines, rocket and turbine engines, and auxiliary power in aircraft and space vehicles.

Contacts

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